

## FOLLOW-UP OBSERVATIONS OF 788 HOHENSTEINA

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CCD photometric observations were made in 2016 November and December of the suspected tumbler and Hungaria group member 788 Hohensteina. The goal was to find a definitive rotation period, which would presumably match one of several reported periods.

Observations of 788 Hohensteina were first started at the end of 2014 July. However, due to equipment failure, it was not possible to complete the work. Luck was kinder the second time around with successful observations made on 21 nights from 2016 Nov 7 to Dec 4.

The observations were made using a Meade 0.35-m ACF OTA mounted on a Mathis Instruments MI-500 and an FLI Proline PL-1001 CCD camera. All images were unbinned with no filter and had flats and darks applied to the images prior to measurement. All measurements were made using *MPO Canopus*, which employs differential aperture photometry to produce the raw data. Period analysis was also performed using *MPO Canopus*, which incorporates the Fourier analysis algorithm (FALC) developed by Harris (Harris *et al.*, 1989). Night-to-night calibration of the data (generally  $< \pm 0.05$  mag) was done using field stars converted to approximate Cousins V magnitudes based on 2MASS J-K colors (Warner, 2007). The Comp Star Selector feature in *MPO Canopus* was used to limit the comparison stars to near solar color.

This year's observations produced a lightcurve with an amplitude of 0.11 mag. Harris *et al.* (2014) showed that with an amplitude in this range, it is possible that a lightcurve could have only a single extrema or three or more extrema, as demonstrated in this case. After a few small zero point night-to-night adjustments ( $\sim 0.05$  mag), the data could be easily analyzed to reflect a period of  $37.137 \pm 0.005$  h, which is very close to the period of 37.176 h found by Oey *et al.* (2008).

It's still uncertain if this asteroid is tumbling since it was not possible to reconcile data from Oey *et al.* (2014), Stephens *et al.* (2014), and sessions from unknown (2006) to match these most recent results, so further evaluation during the next opposition would be suggested.

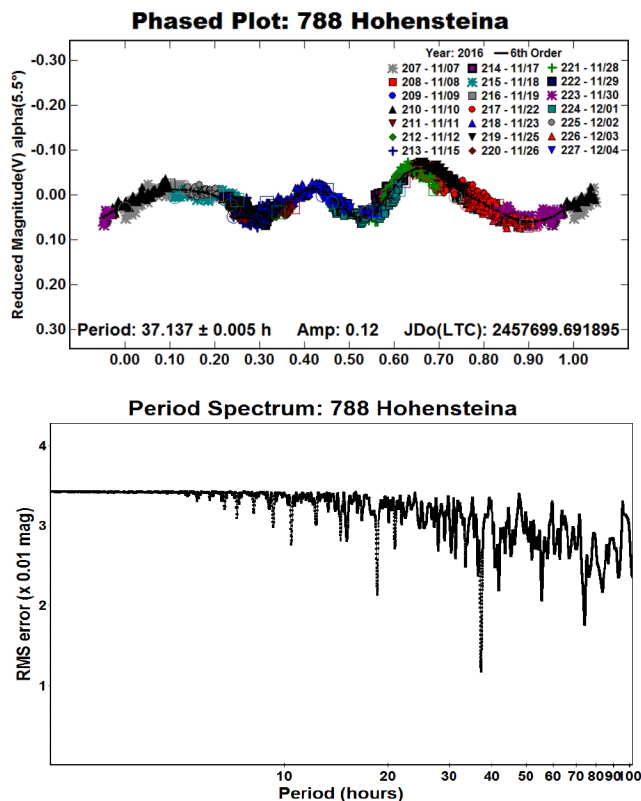
## Acknowledgements

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| Number | Name        | 2016 mm/dd  | Pts  | Phase      | L <sub>PAB</sub> | B <sub>PAB</sub> | Period(h) | P.E.  | Amp  | A.E. | Grp |
|--------|-------------|-------------|------|------------|------------------|------------------|-----------|-------|------|------|-----|
| 788    | Hohensteina | 11/07-12/04 | 1390 | 5.46, 7.23 | 54.4             | -14.4            | 37.137    | 0.005 | 0.12 | 0.01 | H   |

Table I. Observing circumstances and results. Pts is the number of data points. The phase angle is given for the first and last date. L<sub>PAB</sub> and B<sub>PAB</sub> are the approximate phase angle bisector longitude and latitude at mid-date range (see Harris *et al.*, 1984). Grp is the asteroid family/group (Warner *et al.*, 2009); H = Hungaria.